

## Report

Project *i-Spy*: a project to support the development of student information skills (i-skills)

### Summary

*This project aimed to make a step change in the university's support for student development of information skills (i-skills) after significant i-skills challenges for students had been identified in the university's digital study environment.*

*A coherent framework to support the development of student i-skills was identified and implemented, incorporating specified learning outcomes and support for different skills levels. The framework is populated with i-skills tutorials in 'bite-size chunks' for students to use in conjunction with timetabled skills sessions and their academic programmes, and also to support independent study. Ease of use is of great importance.*

*The project outcomes were achieved through a successful partnership between LIS Consultants and external experts, selected through a formal tender process in December 2005.*

*Project i-Spy was funded by a university learning and teaching development fund award 2005/6.*

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**Report**

In the modern world, people increasingly need skills of evaluating and managing information, in both personal and working lives. Curriculum design and pedagogy within HE must support and develop these skills and encourage students to take responsibility for their own learning. (HEFCE, 2004)

This project aimed to make a step change in the university's support for student development of i-skills for managing activities that involve finding and using information and to promote student engagement with this important area. The activities involved can be summarised by this definition of i-skills: 'the ability to identify, assess, retrieve, evaluate, adapt, organise and communicate information within an iterative context of review and reflection' (JISC, 2005).

The rationale for a review of i-skills support was the need to re-focus existing expertise and a successful track record on the information literacy requirements of the modern digital environment, and to address the tendency in recent years for i-skills to be neglected through conflation with ICT skills. Since the university's digital study environment, StudyNet, has become the normal context for student engagement with blended learning and independent study, significant i-skills challenges for students have been identified.

**Project aims**

- To promote and support the development of student i-skills for the modern knowledge society within a coherent structured framework.
- To enhance the contribution of LIS Consultants to student i-skills development.

This project involved the development and implementation of a coherent framework to support the development of student i-skills. This framework incorporates specific learning outcomes and supports different skills levels. It is populated with i-skills content (tutorials) in 'bite-size chunks' which relate to skills levels and learning outcomes and can be used by students in conjunction with timetabled skills sessions and their academic programmes, and to support independent study.

**Work undertaken and outcomes achieved**

LIS decided to work with experienced external experts on some aspects of the project. The external consultants, Information Management Associates (IMA), demonstrated a wide-ranging knowledge of the subject, with current work at the King's College London Institute for Learning and Teaching and experience of working on related projects. An initial meeting with IMA was held in January to establish the project context and a plan for taking the work forward. The work progressed in six phases, each with identifiable outcomes.

**1 Research and evaluation**

In this first phase, i-skills models were reviewed and evaluated in order to inform the identification and implementation of an i-skills framework and content for UH. IMA evaluated existing i-skills models for synergy with the university context including:

- the Society of College, National and University Libraries (SCONUL) Seven Pillars of Information Literacy model which illustrates the range of skills involved (SCONUL, 2004)
- the Big Blue Project which surveyed current practice in information skills training for students (Manchester Metropolitan University, 2002)

- the JISC i-skills model for supporting skills levels of staff in further and higher education (JISC, 2005).

These models have been adopted by other universities. However, IMA found that they tended to present simplistic lists of competencies rather than embed i-skills into the process of knowledge construction as was required at UH. This review underpinned the phase 3 work: drawing up a UH i-skills framework.

*Outcome 1: Report 1 – Framework to support the development of students' information skills (i-skills); February 2006 (IMA(a), 2006).*

## 2 The UH perspective

The second phase was to gather views within UH about i-skills priorities, levels and requirements. Consultations with staff and student about i-skills requirements were carried out to raise issues that would help to influence the choice of model and approach for this project.

### Staff consultation

The staff telephone consultation was arranged by LIS and carried out by IMA. Fourteen staff from across the university with a particular interest in and strategic overview of student i-skills participated in individual 30-minute structured telephone interviews. The consultation covered staff views on:

- definition of information skills
- skills they felt required attention
- differences in skills demands
- teaching and learning initiatives
- need for enhancement of information skills
- need to integrate i-skills work into the university.

### Student consultation

Student consultation was carried out using a questionnaire based on three scenarios of information-handling behaviour: fast surfers, broad scanners, and deep divers, as described by Heinström (2002). This study explored the influence of student personality and study approach on information-seeking behaviour. Fast surfers want to find information quickly with the minimum of effort and 'skim the surface of the information wave'. Broad scanners are characterised by 'exhaustive and flexible information seeking in a wide range of sources'. Deep divers go 'far beneath the surface of the information flow' to obtain high quality information. Over 100 students completed the questionnaire on specific days in the three learning resources centres. These students represented all faculties: 92 per cent were full-time students; 88 per cent were aged 18–30 years. The results ranked the top five i-skills as:

- 1 choosing the right information for an assignment or piece of coursework
- 2 taking good notes during lectures
- 3 judging whether information is of good quality
- 4 organising the information found
- 5 finding information in books.

When asked about their own mastery of i-skills, and what help they would welcome, students most frequently mentioned:

- 1 seeking/finding information (internet, databases, electronic searching, books)
- 2 presenting information (report writing, PowerPoint, spreadsheets, essay writing).

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In summary, the following recommendations were made:

- LIS Consultants should continue to work with teaching staff to embed i-skills in courses
- the potential links between i-skills and other skills areas identified by students should be reviewed to see whether there is scope for further collaborative action at strategic level within the university
- consideration should be given to providing more i-skills support in the specific areas identified by students.

The consultation findings were presented together with Report 1 on the i-skills model to LIS at a workshop in March and these informed the development of the UH i-skills framework.

*Outcome 2: Report 2 – Report on the key informant interviews and consultation with students; April 2006 (IMA(b), 2006).*

**3 Drawing up a UH i-skills framework**  
This phase involved preparing a UH i-skills framework together with a checklist of good practice criteria to inform the design of materials.

***i-Spy framework***  
The report 'Framework to support the development of students' information skills' (IMA(a), 2006) developed the concept that the behavioural approach seen in existing models should be superseded by a view of information literacy as an integral part of the process of knowledge creation and construction. This is particularly true at Hertfordshire where students

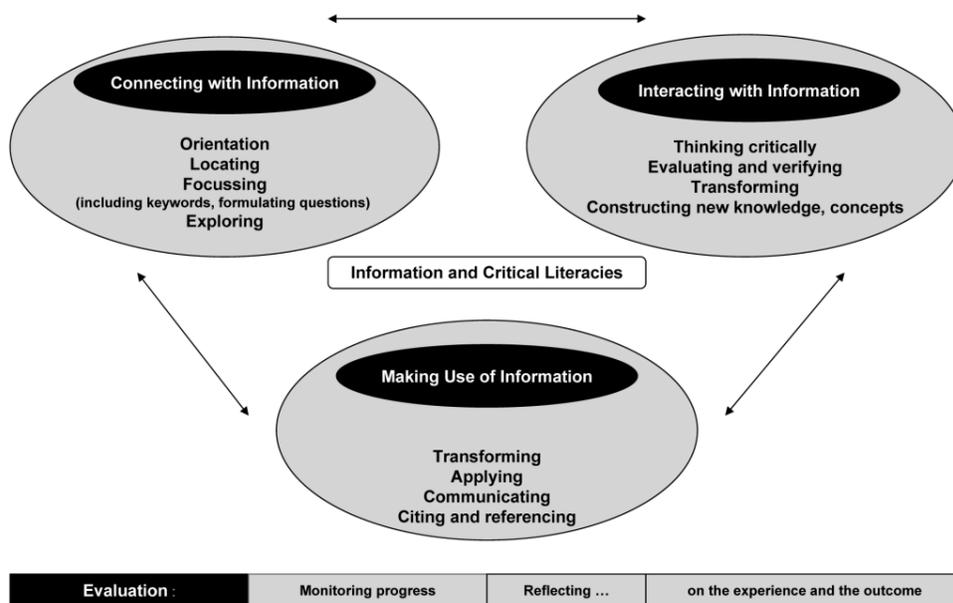


Figure 1: *i-Spy* Summary diagram

are expected to engage actively with information in an e-environment. The new i-skills framework model developed at Hertfordshire takes a radical approach, using only three main categories which reflect how learners move back and forth between different processes when working with information. These three categories are:

- connecting with information
- interacting with information
- making use of information.

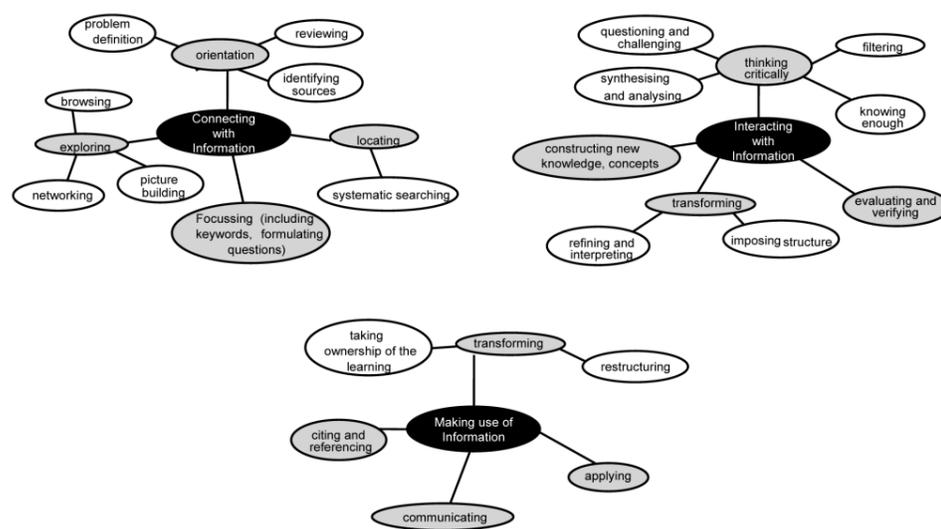
Skills-based language is used to describe these processes, e.g. exploring, focusing, communicating, applying, thinking critically, evaluating, transforming.

The full framework diagram illustrates the range of skills required for dealing with information in a modern knowledge society and the non-linear nature of their application.

**Checklist of criteria for good practice**

During this phase, IMA provided a checklist of criteria for good practice (IMA(c), 2006) to underpin the design and evaluation of i-skills materials informed by sound pedagogical principles. The checklist encourages critical evaluation of materials, for example by asking whether the materials:

- motivate students to learn
- address differences in individual learning styles
- create real-life contexts for learning



**Evaluation :** Monitoring progress Reflecting ... on the experience and the outcome  
 Figure 2: i-Spy Framework full diagram

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- avoid information overload
- promote active learning
- provide opportunities for interaction and reflection
- make provision for feedback to the developer.

The checklist is also used to inform the peer review process that forms part of the associated quality assurance and enhancement procedures.

*Outcome 3: Framework:*

- i-Spy Framework: summary diagram February 2006 (Figure 1)
- i-Spy Framework: full diagram February 2006 (Figure 2)
- Checklist of criteria for good practice in designing i-skills materials March 2006 (IMA(c), 2006).

#### 4 Implementation and content

The framework was now ready to be populated with initial content for 2006/2007. IMA facilitated a workshop for LIS Consultants in March with the objectives of:

- exploring issues associated with implementing the framework and checklist of criteria
- identifying draft content for user testing purposes
- considering feedback from staff and student consultations.

Development teams created new tutorials for four topics chosen to reflect the needs prioritised by the investigations and consultations. The tutorials were designed for online use, with print-friendly versions to increase accessibility, and were completed in time to be user-tested in May.

*Outcome 4:* four i-skills tutorials on: identifying sources; systematic searching; evaluating and verifying; citing and referencing (LIS(a), 2006).

#### 5 Pilot testing and review

This phase introduced the draft content to students, for testing, revision and implementation of the pilot from September 2006.

User friendly and intuitive StudyNet pages were created to introduce the i-Spy framework and concepts, and to support navigation of the tutorials. These pages can be accessed at: <http://www.studynet.herts.ac.uk/go/ispay>.

The four tutorials introduced in the pilot were:

- Identifying sources of information', to help students identify and find the most appropriate sources to meet their information needs
- Evaluating and verifying', to advise students on how to evaluate the quality of information from a variety of sources using a structured approach
- Citing and referencing' which helps students to understand the importance of acknowledging sources as well as guidance on correct citation and referencing
- Systematic searching', to guide students through the process of identifying key terms, constructing an effective search strategy, and using information databases to obtain relevant results.

The draft tutorials were tested in two student workshops. The detailed and informative feedback was evaluated and a report compiled by IMA. Several interesting points emerged:

- in general the students highly appreciated, valued and responded to

these materials, and echoed a number of the points made in the earlier 'Checklist of criteria for good practice' about effective e-learning materials

- there were several requests to link the materials to course requirements
- students welcomed choice and empowerment in their preferences, pace and level of learning – this was particularly important when providing generic materials
- the students enjoyed the high levels of interaction with the materials provided; ideally, this should stimulate thinking and the active construction of knowledge
- information should be provided in manageable 'chunks' per page.

#### 6 Quality assurance and enhancement arrangements (QA&E)

The final phase was to define and establish a QA&E strategy with rigorous procedures in line with the UH academic quality and enhancement strategy for systematic monitoring and evaluation, and to sustain the future value of i-Spy in supporting student i-skills development. Recognised information literacy standards were used to draw up a framework of desirable aims and learning outcomes on which to base the tutorials.

#### Aims and learning outcomes

A framework of learning outcomes was mapped on to the Hertfordshire i-skills model using recognised international standards. The Australian and New Zealand information literacy framework (ANZIIL, 2004) is based on

Outcome 5: Report 3 – report on the student feedback; June 2006 (IMA(d), 2006).

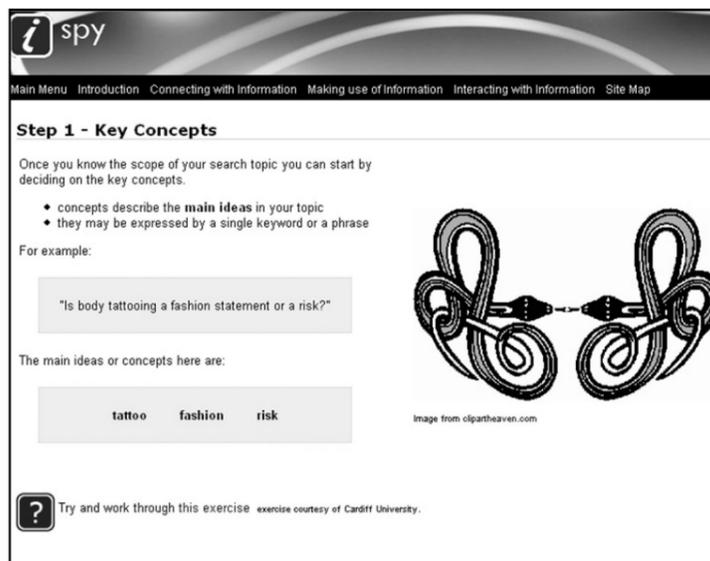


Figure 3: i-Spy tutorial example screenshot

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the four overarching principles that information literate people:

- engage in independent learning through constructing new meaning, understanding and knowledge
- derive satisfaction and personal fulfilment from using information wisely
- individually and collectively search for and use information for decision making and problem solving in order to address personal, professional and societal issues
- demonstrate social responsibility through a commitment to lifelong learning and community participation.

These principles were mapped to the top level aims for each of the three main categories of the *i-Spy* framework: connecting with information; interacting with information; making use of information. A fourth aim, evaluation, monitoring and reflecting: recognise that the process is evolutionary and revise the development process appropriately, was introduced to represent the iterative and reflective nature of working with information.

The Association of College and Research Libraries *Information Literacy Competency Standards for Higher Education* (ACRL, 2000) were used to inform the mapping of levels of ability to the learning outcomes, based on different levels of thinking skills. These were cross-referenced with the well-established vocabulary of Bloom's Taxonomy (2005).

In 2005, the university adopted the Southern England Consortium (SEEC) for Credit Accumulation and Transfer *Credit Level Descriptors for Further and Higher Education* (2003), which provide 'a description of levels of learning through a hierarchy of knowledge and skills'. The SEEC descriptors of generic skills competencies relating to information skills were

also mapped to the *i-Spy* aims and learning outcomes framework and conflated to 'beginner' and 'experienced' levels for users of *i-Spy* materials.

#### **Quality assurance and enhancement (QA&E)**

Outline quality assurance mechanisms for delivery of student skills development drawn up in 2005 by LIS Consultants were enhanced with *i-Spy* specific processes, resulting in procedures for:

- peer review
- use of a recognised set of aims and learning outcomes
- evaluation plan
- standardisation of terminology with an emphasis on 'plain language'.

A set of QA&E procedures was developed to inform the application of the *i-Spy* framework and ensure that new or revised materials comply with the agreed rigour.

Three LIS Consultants were designated to coordinate, advise and monitor QA&E in one each of the three main *i-skills* categories of the framework, documenting the lifecycle of all *i-Spy* materials in a log.

In future, *i-Spy* materials will be sampled for annual review at a user testing workshop facilitated by IMA. A student questionnaire will be implemented on StudyNet to provide feedback to LIS Consultants, and informal evaluation from users, colleagues, school and faculty meetings will be collated. These arrangements will be used to evaluate the *i-Spy* provision and student engagement with *i-skills*.

#### **Outcome 6:**

- *i-Spy* Aims and Learning Outcomes mapped to Bloom's Taxonomy and SEEC credit levels June 2006 (LIS(b), 2006)

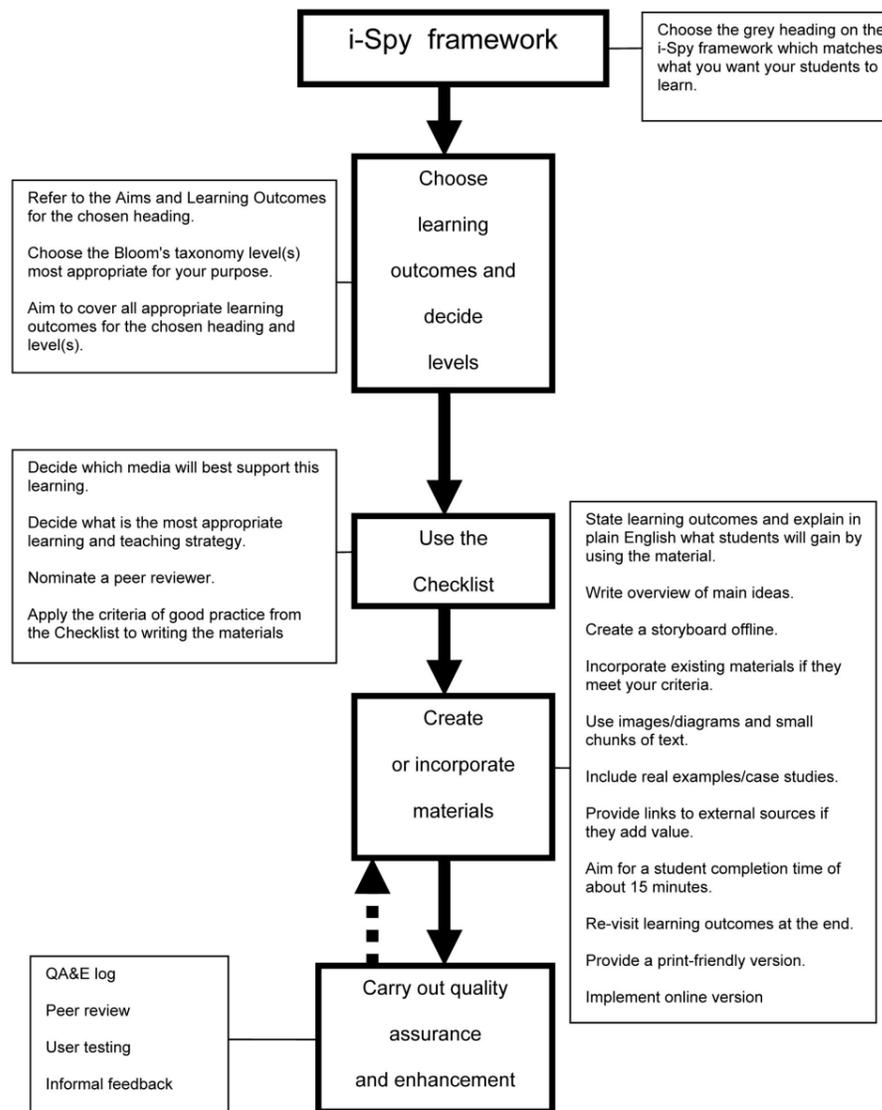


Figure 4: i-Spy Quality Assurance and Enhancement implementation diagram

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- quality assurance and enhancement strategy for LIS skills development: outline proposals annotated with project *i-Spy* implementation; June 2006. (LIS(c), 2006).

**Evaluation**

The aims of the project were achieved and exceeded through the successful and creative partnership of LIS Consultants and IMA. IMA's contribution to the project was instrumental in providing a wider context for the work and supporting LIS Consultants. By March 2006, LIS Consultants had reached a point from which they could take the project forward with energy and enthusiasm. The strength and quality of the project outcomes reflect the effort involved.

**Transfer to other areas**

Project *i-Spy* supports a learner-centred approach and student development of a range of graduate skills.

The tutorials will:

- contribute to student academic achievement through the development of skills to underpin targeted search and navigation techniques; effective identification and retrieval of authoritative and relevant information; effective use of information sources; and of their time
- contribute to the enhancement of graduate employability skills through links with the university personal development planning (PDP) system
- support an excellent return on the university's investment in its collections of information resources and services
- potentially contribute to the development of staff i-skills.

Over the coming year, the project will continue to develop additional tutorials, which will contribute a key element in fulfilling the LIS strategy of self-help provision and flexible learning support. Academic staff will be invited to join the development teams for future tutorials and collaborative partnerships such as the one with LIS Consultants will be extended to ensure the project's continuing relevance to academic study priorities in the university.

The generic nature of the *i-Spy* material means that tutorials can be applicable in a wide variety of contexts where development of student i-skills is important. LIS Consultants are incorporating the tutorials within their student skills support practice and linking from learning resources pages on StudyNet. Academic staff can readily embed the tutorials in StudyNet module pages and there are already examples of practice enhancing the skills components of courses in health and business studies. To facilitate the inclusion of *i-Spy* materials with graduate employability skills, the tutorials are linked from StudyNet MAPS and the PDP system, and students can be encouraged to incorporate their learning from *i-Spy* tutorials in their development portfolios.

**Dissemination of the project outcomes**

This report is one element of planned dissemination of the project outcomes. A poster presentation of the project in progress was made at the university's annual learning and teaching conference in May 2006, and the International Blended Learning Conference in June 2006. The completed project with case studies was presented to the university's annual learning and teaching conference 2007, and at the Librarians' Information Literacy Annual Conference (LILAC) 2007.

The project will be disseminated by LIS Consultants across the university as part of their liaison activities. The LIS newspaper,

*The Information*, included a leading article on it in its spring 2007 edition. Key project documents are available to staff and students linked from StudyNet Learning and Information Services General Information.

#### References

Association of College and Research Libraries (2000) *Information Literacy Competency Standards for Higher Education*. Available from <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm> (accessed 1 June 2006)

Australian and New Zealand Institute for Information Literacy (2004) *Australian and New Zealand Information Literacy Framework: principles, standards and practice*. 2nd edn, available from [http://www.anzill.org/resources/Info lit 2nd edition.pdf](http://www.anzill.org/resources/Info%20lit%202nd%20edition.pdf) (accessed 1 June 2006)

Bloom's taxonomy (2005). Available from [www.officeport.com/edu/blooms.htm](http://www.officeport.com/edu/blooms.htm) (accessed 27 June 2006)

Heinström, J. (2005) Fast surfing, broad scanning and deep diving: the influence of personality and study approach on students' information-seeking behaviour. *Journal of Documentation* 61 (2), pp. 228–47. Available from <http://www.emeraldinsight.com/10.1108/00220410510585205> (accessed 20 June 2006)

IMA (Information Management Associates) (2006):  
 (a) *Framework to support the development of students' information skills (i-skills)*: February 2006  
 (b) *Report on the key informant interviews and consultation with students*: April 2006  
 (c) *Checklist of criteria for good practice in designing i-skills materials* March 2006  
 (d) *Report on the student feedback*: June 2006

IMA (a, b, c, d) references available from <http://www.studynet.herts.ac.uk/ptl/common/LIS.nsf/lis/projectspy> (accessed 20 October 2006)

JISC (2005) *Improving staff i-skills*. Available from [http://www.jisc.ac.uk/uploaded\\_documents/JISC-SISS-Improving-v1-final.pdf](http://www.jisc.ac.uk/uploaded_documents/JISC-SISS-Improving-v1-final.pdf) (accessed 20 June 2006)

LIS (a) (Learning and Information Services) (2006) *i-skills tutorials*. Available from <http://www.studynet.herts.ac.uk/ptl/common/LIS.nsf/lis/projectspy> (accessed 20 October 2006)

LIS (2006)  
 (b) *i-Spy aims and learning outcomes mapped to Bloom's taxonomy and SEEC credit levels*, June 2006  
 (c) *Quality assurance and enhancement strategy for LIS skills development: outline proposals annotated with project i-Spy implementation*: June 2006

LIS (b,c) references available from <http://www.studynet.herts.ac.uk/ptl/common/LIS.nsf/lis/projectspy> (accessed 20 October 2006)

Manchester Metropolitan University (2002) *The big blue project*. Available from <http://www.library.mmu.ac.uk/bigblue/bigblue.html> (accessed 27 June 2006)

Society of College, National and University Libraries (SCONUL) (2004) *Learning outcomes and information literacy*. Available from [http://www.sconul.ac.uk/groups/information\\_literacy/papers/outcomes.pdf](http://www.sconul.ac.uk/groups/information_literacy/papers/outcomes.pdf) (accessed 1 June 2006)

Southern England Consortium for Credit Accumulation and Transfer (2003) *Credit level descriptors for further and higher education*. Pp. 14–18. Available from [www.seec-office.org.uk/creditlevel descriptors2003.pdf](http://www.seec-office.org.uk/creditlevel descriptors2003.pdf) (accessed 27 June 2006)

#### Biographical notes

The project was conducted by Learning and Information Services Consultants in collaboration with Information Management Associates.